

MISSION UPDATE

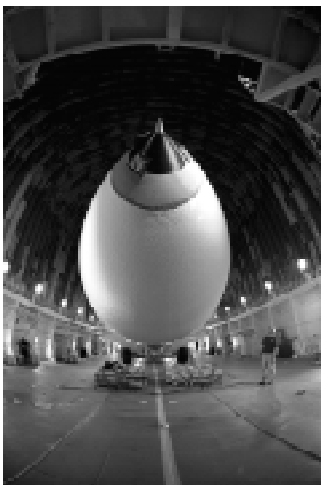
STS-89



Back home — The orbiter Endeavour and its seven-member crew touch down on KSC's Shuttle Landing Facility, Runway 15, at 5:35 p.m. EST, Jan. 31. Below, returning astronaut/cosmonaut researcher David Wolf prepares to depart for Houston the following day. Wolf completed 128 days in orbit, including 113 aboard the Russian Space Station Mir. Endeavour was reported to be in good shape following the nine-day STS-89 mission.



Super lightweight tank



On dock — Checking in at 7,500 pounds less than its predecessor but looking much the same, the super lightweight tank is now at KSC. Above right, Bren Wade, chief mate of booster retrieval ship *Liberty Star*, was among the crew that helped bring the new tank to Florida by barge (shown here) from the manufacturing plant in Louisiana. High winds and stormy weather kept the barge at Port Canaveral for several days, with delivery to KSC completed Feb. 6.

Spaceport News

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John F. Kennedy Space Center

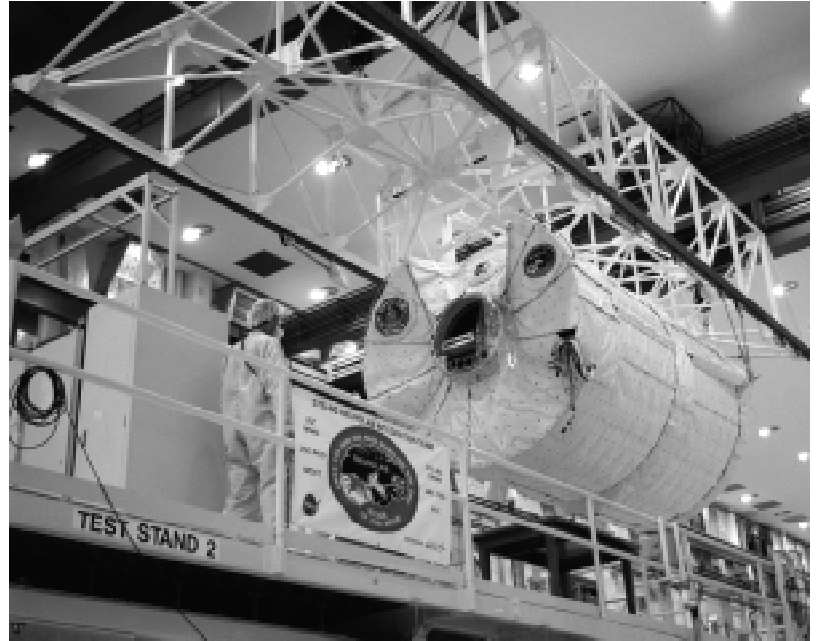
Spacelab gives way to International Space Station era

On Feb. 4, a symbolic door closed on one of the most successful chapters in Shuttle program history. For the last time, a Spacelab module completed preflight preparations in the Operations and Checkout (O&C) Building and was installed in the payload canister for transfer to the Orbiter Processing Facility.

This phase of the Shuttle program is winding down as the second phase of the International Space Station (ISS) program gets under way. Microgravity and life sciences research that formerly was conducted in Spacelab modules will eventually be conducted inside the completed ISS.

"It's been a great program with a lot of great successes," observed Mike Stelzer, Spacelab/Experiment Phase-down lead for NASA at KSC.

A ceremony was held Feb. 6 in the O&C high bay to honor the hardware, KSC workers, experiment scientists and astronauts who have helped make the Spacelab missions an integral part of the research conducted on the Space Shuttle since the first Spacelab flight in 1983. Attending were Roy Bridges, center director; Sterling Smith, acting manager,



A SPACELAB module is transferred for the last time Feb. 4 from a test stand in the Operations and Checkout Building to the canister transporter. This module is configured as Neurolab, a life sciences research mission focusing specifically on the neurological system. Composed of the brain, spinal cord, peripheral nerves and sensory organs, the human nervous system is the most complex system in the body.

Payload Carriers Program Office; Bruce Melnick, Boeing, Payload Ground Operations Contract program manager; Dallas Gillespie, Boeing, deputy, KSC operations; and Tom Breakfield, formerly NASA KSC Payload Flight Operations director.

"This is another milestone in the history of human spaceflight," said Bridges, who flew as pilot on the third

Spacelab module flight, STS 51-F in 1985. Bridges noted that Spacelab demonstrated the capability of conducting science in space for relatively long-duration missions. The program also led to the forging of international partnerships as each mission unfolded, setting the stage for the international participation

(See SPACELAB, Page 2)

USA reducing work force

Space Flight Operations Contractor (SFOC) United Space Alliance (USA) is reducing the size of its work force both here in Florida and at its Texas location.

(See JOBS, Page 4)

KSC All-American Picnic is May 16

The 1998 KSC All-American Picnic will be held Saturday, May 16, from 10 a.m. to 4 p.m. at KARS Park I.

Tickets will go on sale approximately two weeks before the event.



As more information becomes available, it will be posted on a Web site linked to the KSC Internal Page, as well as in the KSC publications *Countdown*, *Spaceport News*, and the *Bulletin*.

Spacelab ...

(Continued from Page 1)

that has defined the ISS program.

Spacelab was designed by the European Space Agency (ESA) for the Space Shuttle program. There were two flight-qualified Spacelab modules, and a third module that was an engineering test module. ESA provided the first flight module, while the United States purchased the second.

The Spacelab program also encompassed several other hardware elements: the Igloo, which provided on-orbit support to unpressurized Spacelab hardware; the Instrument Pointing System (IPS) for precise pointing of telescopes; pallets capable of carrying scientific instruments in the orbiter payload bay; and the Mission Peculiar Experiment Support Structure (MPESS), also a type of payload bay carrier.

Including the 15 flights to date of the module, Spacelab hardware has flown in some combination or another on 42 Shuttle flights — nearly half of the 89 flights in Shuttle program history through STS-89. Include the Shuttle-Mir missions that featured the Spacelab tunnel and the number goes higher.

Multiple benefits

The Spacelab concept of modular experiment racks in a pressurized shirt-sleeve environment made it highly user-friendly and accessible. Numerous experiments conceived by hundreds of scientists on the ground were conducted by flight crews in orbit.

Spacelab modules served as on-orbit homes for everything from squirrel monkeys to plant seeds. Pallets and MPESSs supported astronomical as well as Earth observations, for servicing the Hubble Space Telescope and for research preparatory to the International Space Station, such as the Japanese-built Manipulator Flight Development (MFD) payload which flew on STS-85 last year.

One of the greatest benefits afforded by the Spacelab missions was the opportunity to fly a mission more than once, with the second or third flight building on the experiences and data gathered from its predecessors.

The laboratory-in-space concept yielded another innovation as well: The payload specialist, a crew member selected from the principal investigator team for his or her expertise in a particular field related to a Spacelab mission.

The concept in effect extended the researcher's laboratory into space and allowed the investigator hands-on, real-time control over the experiments.

Speaking at the ceremony, former astronaut Melnick noted that more than 98 per cent of all Spacelab mission science objectives were accomplished.

The accomplishments of the team that processed Spacelab over the years also were praised at the ceremony.

"You are the secret ingredient," Bridges told the gathering. "You work the magic to get it done on-time and right."

"We can all be proud that we worked on a program that lasted 20 years," said Smith, echoing Bridges' praise.

"I think this team has plowed a lot of new ground," observed Breakfield. If the Shuttle-Mir docking flights represent Phase I of the ISS effort, then Spacelab was Phase 0, he said.

Legacy will continue

And while the primary purpose of the Feb. 6 ceremony was to honor an illustrious past, the legacy of Spacelab will continue into the ISS era as well as in other programs.

Although the two flight modules will no longer fly in space, the Spacelab pallets and MPESSs will be used in the International Space Station program.

The usefulness of Spacelab will manifest itself in other more subtle ways as well. Many of the advances and lessons-learned during the Spacelab era will be carried forward into the ISS program, such as:

- Telescience, involving researchers on the ground in remote locations controlling their experiments in space.
- An experienced KSC work force familiar with Spacelab hardware and the process of reflighting a piece of payload hardware more than once. "We got a lot of experience from Spacelab that will help with ISS," noted Tracy Gill, NASA Experiment Integration Electrical lead. "We know how to handle the hardware and fix things. Spacelab has been a great building block for the payload team."

Boeing Technician Terry Camarata can testify to that. Camarata joined the payload team at KSC in 1979. He remembers working 44 days straight to get the first Spacelab module flight, STS-9, ready to fly in November 1983. Camarata worked in the Automatic Test Equipment control rooms in the O&C, from which Spacelab hardware could be checked out prior to flight.

He now has a similar job with the



THE Spacelab commemoration ceremony in the O&C Feb. 6 featured a Brevard Symphony orchestra quintet and four speakers, including Center Director Roy Bridges, against the backdrop of the American flag, a banner hailing Spacelab as the pathway to the International Space Station and the payload canister transporter holding the STS-90 Neurolab module. At the end of the ceremony, the doors on the canister were shut completely for the last time on a flight-ready Spacelab module. Transfer to the Orbiter Processing Facility was slated to occur Feb. 11.

Test, Control and Monitor System in the SSPF, checking out station payloads on the ground before they fly in space.

Although he hates to see Spacelab phase down, Camarata notes the tremendous technology advances that have been made since Spacelab was first conceived.

- Equipment and hardware that saw its infancy on Spacelab flights, like the Japanese MFD (a type of robot arm), will eventually be used on the space station.

In fact, the flight schedule for the pallets is actually more intensive in the ISS era, Smith pointed out. "The pallets lend themselves to logistics missions, and a lot of the ISS flights will be focused on ferrying materials from here to orbit," he said.

Three of the 10 Spacelab pallets are now in the Space Station Processing Facility, with one already being used to support the third U.S. ISS assembly flight. Two others are at Goddard Space Flight Center supporting Hubble, and the remainder are in the O&C. In coming years, the pallets will also support non-ISS science missions as well.

The MPESSs also are available for flight, although none are currently

Shuttle missions carrying Spacelab hardware

Flight #	STS #	Payload	Carrier	Launch
1	2	OSTA-1	pallet	11/12/81
2	3	OSS-1	pallet	03/22/82
3	7	OSTA-2	MPESS	06/18/83
4	9	SPACELAB-1	module, pallet	11/28/83
5	41-D	OAST-1	MPESS	08/30/84
6	41-G	OSTA-3, LFC, ORS	pallet, 2 MPESSs	10/05/84
7	51-A	SRM	2 pallets	11/08/84
8	51-B	SPACELAB-3	module, MPESS	04/29/85
9	51-G	SPARTAN-01	MPESS	06/17/85
10	51F	SPACELAB-2	3 pallets	07/29/85
11	61-A	SPACELAB-D1	module	10/30/85
12	61-B	EASE/ACCESS	MPESS	11/26/85
13	61-C	MSL-2	MPESS	01/12/86
14	51-L	SPTN-HALLEY	MPESS	01/28/86
15	35	ASTRO-1	2 pallets	12/02/90
16	40	SLS-1	module	06/05/91
17	42	IML-1	module	01/22/92
18	45	ATLAS-1	2 pallets	03/24/92
19	50	USML-1	module	06/25/92
20	46	TSS-1, EOIM III	pallet, 2 MPESSs	07/31/92
21	47	SPACELAB-J	module	09/12/92
22	52	USMP-1	2 MPESSs	10/22/92
23	56	ATLAS-2	pallet	04/08/93
24	55	SPACELAB-D2	module	04/26/93
25	58	SLS-2	module	10/18/93
26	61	HST SM-01**	pallet	12/02/93
27	62	USMP-2	2 MPESSs	03/04/94
28	59	SRL-1	pallet, MPESS	04/09/94
29	65	IML-2	module	07/08/94
30	64	LITE-1	pallet	09/09/94
31	68	SRL-2	pallet, MPESS	09/30/94
32	66	ATLAS-3	pallet	11/03/94
33	67	ASTRO-2	2 pallets	03/02/95
34	71	SL-M	module	06/27/95
35	73	USML-2	module	10/20/95
36	75	TSS-1R, USMP-3	pallet, 3 MPESSs	02/22/96
37	78	LMS	module	06/20/96
38	82	HST SM-02	pallet	02/11/97
39	83	MSL-1	module	04/04/97
40	94	MSL-1	module	07/01/97
41	85	MFD	MPESS	08/07/97
42	87	USMP-4	2 MPESSs	11/19/97
43	90	NEUROLAB*	module	04/02/98
44	101	SRTM*	pallet	09/16/99
45	103	HST SM-03*	2 pallets**	12/02/99

* These missions have not yet launched.

** For the HST Servicing Missions, a pallet was given to the HST program, and is no longer part of Spacelab inventory. However, on HST SM-03, an additional pallet has been loaned to the HST program, and is expected back after the mission.

manifested.

The three Spacelab modules will find new homes on Earth rather than in space. One will go to the Smithsonian Air and Space Museum in Washington, D.C.

The fate of the other two will be determined through the Spacelab educational program created by NASA Headquarters, said Bob Dorian, NASA KSC Flight Systems Program manager.

And the O&C, which has been supporting human space flight since the 1960s, will also continue to have a useful life. ISS truss acceptance testing will be performed in the O&C high bay, noted Debbie Bitner, NASA Payloads Manifest and Multiflow manager.

"Other ISS hardware will come through here as well," including some test equipment currently housed at Marshall Space Flight Center, she said.

Director for a day



EXPLORING OPTIONS — Astronaut High School Senior Jason Rodgers took advantage of Brevard County's School-to-Work Program Feb. 4 to learn more about the responsibilities of the KSC director. Here, Rodgers (second from right) and Center Director Roy Bridges (right) meet in the Operations and Checkout Building with Darcy Miller, project engineer, Payload Processing (left) and John Lekki, lead electrical engineer, Payload Processing (behind Miller). The School-to-Work program encourages students to spend a day in the workplace shadowing a professional in their chosen field. In addition to learning about a portable data collection procedure system from Miller and Lekki, Rodgers also got some insight into Bridges' daily schedule as head of KSC. Given Rodgers' choice of Bridges — a retired Air Force major general — as the professional he wanted to shadow, perhaps it's not surprising that the Titusville student will be attending the Air Force Academy after he graduates.

Sexual harrassment training to be held Feb.18 instead of Feb. 16

The second of two sexual harrassment training programs for civil servants will be held Feb. 18. The Feb. 16 date previously provided was incorrect.

The program is being held

in the Training Auditorium on Feb. 18, from 1:30 p.m. – 3:30 p.m. The first program was held Feb. 11. The training is being offered to all NASA/KSC employees, and is mandatory for managers and supervisors.

NKMA offers scholarships

The NASA Kennedy Management Association (NKMA) is pleased to announce that it intends to award scholarships in the minimum amount of \$500 each, to promote educational opportunities for high school seniors, college, and vocational school students who are academically talented and who have demonstrated a commitment to excellence.

Applications can be downloaded from the NASA homepage located at: <http://nkma.ksc.nasa.gov> and are due March 6.

In order to qualify for the scholarship, the applicant must be a KSC active civil service employee, or the spouse or dependent of an

employee. Questions about scholarships and additional applications may be directed to Maria Lopez-Tellado, MM-H, at 867-2133.



International Space Station

Amazing fact

The solar panels on the station will be the largest ever built — about 100 feet long — to provide the electrical power needed to operate the station on-orbit. Sixteen of these solar panels must work in concert, while massive arrays constantly track the sun and distribute 110 kilowatts of electrical power through a vast network of batteries, relays and distributors.

— Boeing fact sheet

Jobs ...

(Continued from Page 1)

The reduction is part of a continuing effort to reduce Shuttle operating costs and achieve greater program efficiencies.

About 557 USA workers will have left the center by Feb. 20, 194 of them voluntary and 363 involuntary. The cuts were across-the-board in order to maintain the right skill mix among the remaining workers. About sixty USA workers in Houston are being let go.

Once the KSC layoffs are complete, there will be 5,330 USA employees supporting ground operations in Florida.

The USA layoffs and unrelated but ongoing civil servant buyouts continue the trend of a declining work force at KSC. Since return to flight in 1988, the contractor and civil service population at the space center peaked in fiscal year '91 at 19,088 people, with 12,915 of them on-site contractor and 2,571 civil service. By the end of last year, the civil service population at KSC had declined to 1,820 workers.

The most current figure available on contractor work force size is from calendar year 1996, when there were 9,518 on-site contractor employees at

KSC and a total work force of 14,520 people.

USA is trying to do as much as possible to help the laid-off workers find new jobs elsewhere, and The Boeing Co., one of the alliance's parent companies, is advertising positions on Cape Canaveral Air Station as well as in Houston.

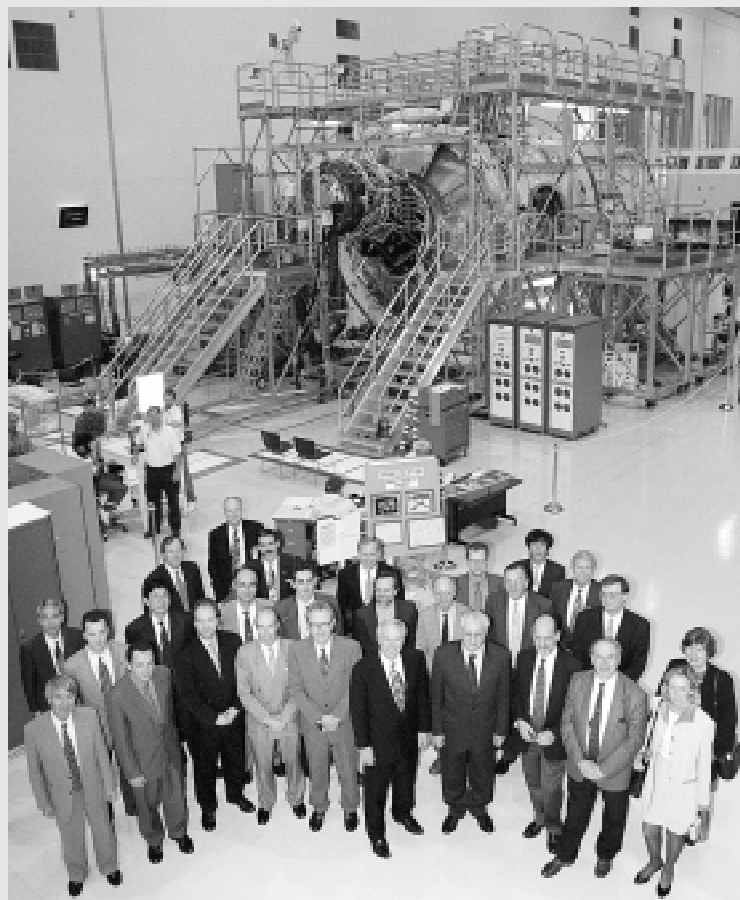
"We are making every effort possible to assist our colleagues through this difficult time," said USA President and Chief Executive Officer Paul Smith.

A job fair was held in both Florida and Houston Feb. 10-12, and USA has established a Career Transition Center at its Titusville facility. Job counseling, resume preparation, fax machines and contact with job services and unemployment offices are among the services offered.

Boeing has indicated it foresees the creation of 150-400 job openings in Houston and Florida. About 150 openings supporting the Delta launch program in Florida are anticipated, and more openings supporting other Boeing work are expected due to annual turnover.

Boeing has set up an electronic database to accept applications and resumes over the Internet. The address is: <http://www.resjobs.com/boeing>

VIP tour



SENIOR DELEGATION — Many senior government officials who participated in a Jan. 29 International Space Station signing in Washington, D.C., took advantage of the opportunity to see the hardware — including Node 1, behind them in the Space Station Processing Facility — at KSC the following day. The 1998 Intergovernmental Agreement on Space Station Cooperation establishes the framework of cooperation among the partners on the design, development, operation and utilization of the station. State Department official Strobe Talbott was the U.S. signatory. Also participating were representatives of Russia, Japan, Canada, and participating countries of the European Space Agency (ESA), including Belgium, Denmark, France, Germany, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland, and the United Kingdom. Three bilateral memoranda of understanding also were signed. The new agreements supersede previous space station agreements among the United States, Europe, Japan and Canada signed in 1988, and reflect changes to the program resulting from significant Russian participation as well as program design changes undertaken by the original partnership in 1998. NASA Administrator Daniel Goldin is at front, center.

Honoring Explorer I



LARGE crowds turned out for the Explorer I 40th anniversary celebration Jan. 31 at the U.S. Air Force Space and Missile Museum on Cape Canaveral Air Station. As speakers broadcast simulations of radio programs announcing the launch and the final countdown, attendees watched a model rocket launch, visited displays and took in the sights of the museum, including the Complex 26 facilities from which the launch took place.



John F. Kennedy Space Center

Spaceport News

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